

What is claimed is:

1. System for opening and closing a moveable roof of a convertible vehicle, comprising:

at least one drive means to open and close the moveable vehicle roof;

at least one position sensor that senses continuously a position of an element of the moveable vehicle roof at least over a subrange of a path of movement; and

a controller that receives a signal from at least one position sensor and generates, in consideration of the at least one position sensor signal, a signal to actuate the at least one drive means;

wherein the at least one position sensor is a linear sensor arranged to sense at least one of the position of two moveable elements of the moveable vehicle roof relative to each other, and the position of one moveable element of the moveable vehicle roof relative to a fixed reference point of the vehicle.

2. System, as claimed in claim 1,

wherein the moveable vehicle roof is a folding top.

3. System, as claimed in claim 2,

wherein the at least one position sensor is coupled and integrated with the at least one drive means.

4. System, as claimed in claim 2,

wherein the at least one drive means includes a piston.

5. System, as claimed in claim 4,
wherein the drive means is operated hydraulically or pneumatically.
6. System, as claimed in claim 3,
wherein the at least one drive means includes a piston.
7. System, as claimed in claim 6,
wherein the drive means is operated hydraulically or pneumatically.
8. System, as claimed in claim 2,
wherein an electric motor is provided as the drive means.
9. System, as claimed in claim 3,
wherein an electric motor is provided as the drive means.
10. System, as claimed in claim 2,
wherein the linear sensor is arranged to permit determination of the
relative position of the position of a main pillar of the moveable vehicle roof to a
fixed reference point of the vehicle.
11. System, as claimed in claim 3,
wherein the linear sensor is arranged to permit determination of the
relative position of the position of a main pillar of the moveable vehicle roof to a
fixed reference point of the vehicle.

12. System, as claimed in claim 2,

wherein the linear sensor is arranged to permit determination of the position of a hold down clamp of the moveable vehicle roof to another reference point of the moveable vehicle roof.

13. System, as claimed in claim 3,

wherein the linear sensor is arranged to permit determination of the position of a hold down clamp of the moveable vehicle roof to another reference point of the moveable vehicle roof.

14. System, as claimed in claim 2, further comprising:

a pivot point sensor,

wherein the pivot point sensor determines, at least over a part of the range of movement, one of the relative position of two moveable elements of the moveable vehicle roof relative to each other and the absolute position of one moveable element of the moveable vehicle roof to a fixed element of the vehicle, and sends a signal corresponding to the determined position to the controller.

15. System, as claimed in claim 3, further comprising:

a pivot point sensor,

wherein the pivot point sensor determines, at least over a part of the range of movement, one of the relative position of two moveable elements of the moveable vehicle roof relative to each other and the absolute position of one

moveable element of the moveable vehicle roof to a fixed element of the vehicle, and sends a signal corresponding to the determined position to the controller.

16. System, as claimed in claim 2, further comprising:

at least one switch that sends a signal to the controller when an element of the moveable vehicle roof has reached a specific position.

17. System, as claimed in claim 3, further comprising:

at least one switch that sends a signal to the controller when an element of the moveable vehicle roof has reached a specific position.

18. System, as claimed in claim 2,

wherein the linear sensor is a magnetoresistive sensor.

19. System, as claimed in claim 18,

wherein the magnetoresistive sensor comprises a magnetized ferrite rod that is guided past a magnetic field sensor.

20. System, as claimed in claim 3,

wherein the linear sensor is a magnetoresistive sensor.

21. System, as claimed in claim 20,

wherein the magnetoresistive sensor comprises a magnetized ferrite rod that is guided past a magnetic field sensor.

22. System, as claimed in claim 2,
wherein the linear sensor works according to the principle of variable inductivity.
23. System, as claimed in claim 22,
wherein the linear sensor comprises a ring is adapted be guided past an induction coil parallel to the axis of a coil.
24. System, as claimed in claim 23,
wherein the ring is made of aluminum or copper.
25. System, as claimed in claim 24,
wherein a conductive piston is guided through the coil.
26. System, as claimed in claim 3,
wherein the linear sensor works according to the principle of variable inductivity.
27. System, as claimed in claim 26,
wherein the linear sensor comprises a ring adapted to be guided past an induction coil parallel to the axis of a coil.
28. System, as claimed in claim 27,
wherein the ring is made of aluminum or copper.

29. System, as claimed in claim 28,
wherein a conductive piston is guided through the coil.
30. A method for opening and closing a moveable roof of a convertible vehicle,
comprising the acts of:
actuating at least one drive means to initiate movement of the movable
roof;
determining continuously a position of an element of the moveable vehicle
roof at least over a subrange of a path of movement with at least one position
sensor; and,
controlling movement of the moveable vehicle roof with a controller,
wherein the controller receives a signal from the at least one position
sensor and controls the at least one drive means in response to the at least one
position sensor signal, and
wherein the at least one position sensor is a linear sensor arranged to
sense at least one of the position of two moveable elements of the moveable
vehicle roof relative to each other, and the position of one moveable element of
the moveable vehicle roof relative to a fixed reference point of the vehicle.
31. The method of claim 30,
wherein the moveable vehicle roof is a folding top roof.

32. The method of claim 31,

wherein the linear sensor determines the relative position of the position of a main pillar of the moveable vehicle roof to a fixed reference point of the vehicle.

33. The method of claim 31,

wherein the linear sensor determines the position of a hold down clamp of the moveable vehicle roof to another reference point of the moveable vehicle roof.

34. The method of claim 31, further comprising the act of:

determining with a pivot point sensor, at least over a part of the range of movement, one of the relative position of two moveable elements of the moveable vehicle roof relative to each other and the absolute position of one moveable element of the moveable vehicle roof to a fixed element of the vehicle,

wherein the controller receives a signal from the pivot point sensor and controls the at least one drive means in response to at least one of the at least one position sensor signal and the pivot point sensor signal.

35. The method of claim 31, further comprising the act of:

determining when an element of the moveable vehicle roof has reached a specific position with at least one switch,

wherein the controller receives a signal from the at least one switch and controls the at least one drive means in response to at least one of the at least one position sensor signal and the at least one switch signal.

36. The method of claim 31,

wherein the linear sensor is a magnetoresistive sensor.

37. A sensing and actuating apparatus for use in opening and closing a moveable roof of a convertible vehicle, comprising:

at least one drive means adapted to open and close the moveable vehicle roof; and

at least one position sensor that senses continuously a position of an element of the moveable vehicle roof at least over a subrange of a path of movement,

wherein the at least one position sensor is a linear sensor arranged to sense at least one of the position of two moveable elements of the moveable vehicle roof relative to each other, and the position of one moveable element of the moveable vehicle roof relative to a fixed reference point of the vehicle, and

wherein the at least one position sensor is coupled and integrated with at least one drive means.